CLAIMS

1. A circuit for controlling an array of n electrostatic actuators, where n is an integer, comprising:

at least one high voltage generator for providing a desired voltage;

n switches operably connected to said generator, each switch being directly connected to one of said n electrostatic actuators;

n capacitors, one of which is connected in parallel to each of said n actuators for receiving voltage from said high voltage generator through said switch; and

a central processor for controlling said desired voltage, said processor further controlling the time each of said n switches is closed to apply said voltage to said capacitors and electrostatic actuators to establish and/or restore said desired voltage therein.

2. The circuit of claim 1, wherein the output of said high voltage generator is a constant high voltage.

3. The circuit of claim 1, wherein the output of said high voltage generator is a constant slope, ramp high voltage.

4. The circuit of claim 1, wherein the output of said high voltage generator is a multiple successive slope, ramp high voltage.

5. The circuit of claim 4, wherein said multiple successive, ramp high voltage contains different slopes to minimize the time of actuation of said n switches.

6. The circuit of claim 1, wherein the output of said high voltage generator is a staircase high voltage.

7. The circuit of claim 1, wherein the output of said high voltage generator has an output switch for minimizing the power.

8. The circuit of claim 1, wherein n is at least 1,000.

9. The circuit of claim 1, wherein n is between 1,000 and 10,000.

10. The circuit of claim 1, wherein said central processor is adapted to calculate the voltage leakage for each of said n electrostatic actuators and capacitors to thereby determine the time said switch is closed.

11. A circuit for controlling an array of n electrostatic actuators, where n is an integer, comprising:

at least one high voltage generator means for providing a desired voltage;

n switch means for transmitting said desired voltage and operably connected to said generator, each switch means being directly connected to one of said n electrostatic actuators;

n capacitor means for storing said voltage, one of which is connected in parallel to each of said n actuators for receiving voltage from said high voltage generator means through said switch means; and

central processor means for controlling said desired voltage, said processor means further controlling the time each of said n switch means is closed to apply said voltage to said capacitor means and electrostatic actuators to restore said desired voltage therein.

12. The circuit of claim 11, wherein the output of said high voltage generator means is a constant high voltage.

13. The circuit of claim 11, wherein the output of said high voltage generator means is a constant slope, ramp high voltage.

14. The circuit of claim 11, wherein the output of said high voltage generator means is a multiple successive slope, ramp high voltage.

15. The circuit of claim 14, wherein said multiple successive, ramp high voltage contains different slopes to minimize the time of actuation of said n switch means.

16. The circuit of claim 11, wherein the output of said high voltage generator means is a staircase high voltage

17. The circuit of claim 11, wherein n is at least 1,000.

18. The circuit of claim 11, wherein n is between 1,000 and 10,000.

19. The circuit of claim 11, wherein said central processor means is adapted to calculate the voltage leakage for each of said n electrostatic actuators and capacitor means to thereby determine the time said switch is closed.

20. A method for controlling an array of n electrostatic actuators, where n is an integer of, comprising the steps of:

providing a desired voltage output from at least one high voltage generator;

connecting n switches to said voltage output and connecting each switch to one of said n electrostatic actuators;

connecting n capacitors in parallel to corresponding n actuators for receiving voltage from said high voltage generator through said switch such that each capacitor and its corresponding actuator is charged when said switch is closed to apply said voltage output; and

controlling said desired voltage with a central processor, said processor further controlling the time each of said n switches is closed to apply said voltage to said capacitors and electrostatic actuators to restore said desired voltage therein.

21. The method of claim 20, wherein the output generated by said high voltage generator is a constant high voltage.

22. The method of claim 20, wherein the output generated by said high voltage generator is a constant slope, ramp high voltage.

23. The method of claim 20, wherein the output generated by said high voltage generator is a multiple successive slope, ramp high voltage.

24. The method of claim 23, wherein said multiple successive, ramp high voltage contains different slopes to minimize the time of actuation of said n switches.

25. The method of claim 20, wherein the output generated by said high voltage generator is a staircase high voltage

26. The method of claim 20, wherein n is at least 1,000.

27. The method of claim 20, wherein n is between 1,000 and 10,000.

27. The method of claim 19, wherein said central processor calculates the voltage leakage for each of said n electrostatic actuators and capacitors to thereby determine the time said switch is closed.